UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 57518

CSAH NO. 3

OVER THE

RED LAKE RIVER

DISTRICT 2 - PENNINGTON COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 5221 (CEI 9A)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 57518, Piers 1 and 2, were found to be in good condition with no defects of structural significance observed. The channel bottom consisted of sand which was well established and appeared stable with no evidence of scour.

INSPECTION FINDINGS:

(A) The 16 inch diameter pile encasements of both piers were coated from top of pile to the channel bottom. The piles typically exhibited no loss of coating from top of pile down 5 feet. From 5 feet below the top of the pile to the channel bottom, the piles exhibited loss of coating over up to 50% of total surface area. In the areas of coating loss, the piles exhibited random areas of corrosion consisting of minor surface corrosion with no appreciable section loss.

(B) Light to moderate accumulations of timber debris and organic material were observed around piles A thru D of Pier 1 and Pier 2

RECOMMENDATIONS:

(A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 57518

Feature Crossed: The Red Lake River

Feature Carried: CSAH No. 3

Location: District 2 - Pennington County

Bridge Description: The superstructure consists of three spans of multiple precast concrete beams supporting a reinforced concrete deck. The superstructure is supported by two reinforced concrete abutments and two concrete filled steel pipe pile piers. The piers are numbered 1 and 2 starting from the west end of the bridge. No design drawings were available.

2. INSPECTION DATA

Professional Engineer Diver: Bradley A. Syler, P.E., S.E.

Dive Team: John J. Loftus, Valerie Roustan

Date: August 18, 2007

Weather Conditions: Sunny, 69 F

Underwater Visibility: 4.0 feet

Waterway Velocity: 1.5 fps

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2

General Shape: The piers each consist of a single row of six concrete filled steel pipe piles. The piles at each end are battered in the direction parallel to the pier. The piles support a rectangular reinforced concrete pile cap with rounded ends.

Maximum Water Depth at Substructure Inspected: Approximately 4.0 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pile cap on the south side of Pier 1.

Water Surface: The waterline was approximately 14.0 feet below reference.
Assumed Waterline Elevation = 86.0.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/08/07

Item 113: Scour Critical Bridges: Code G/97

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____ Yes X No

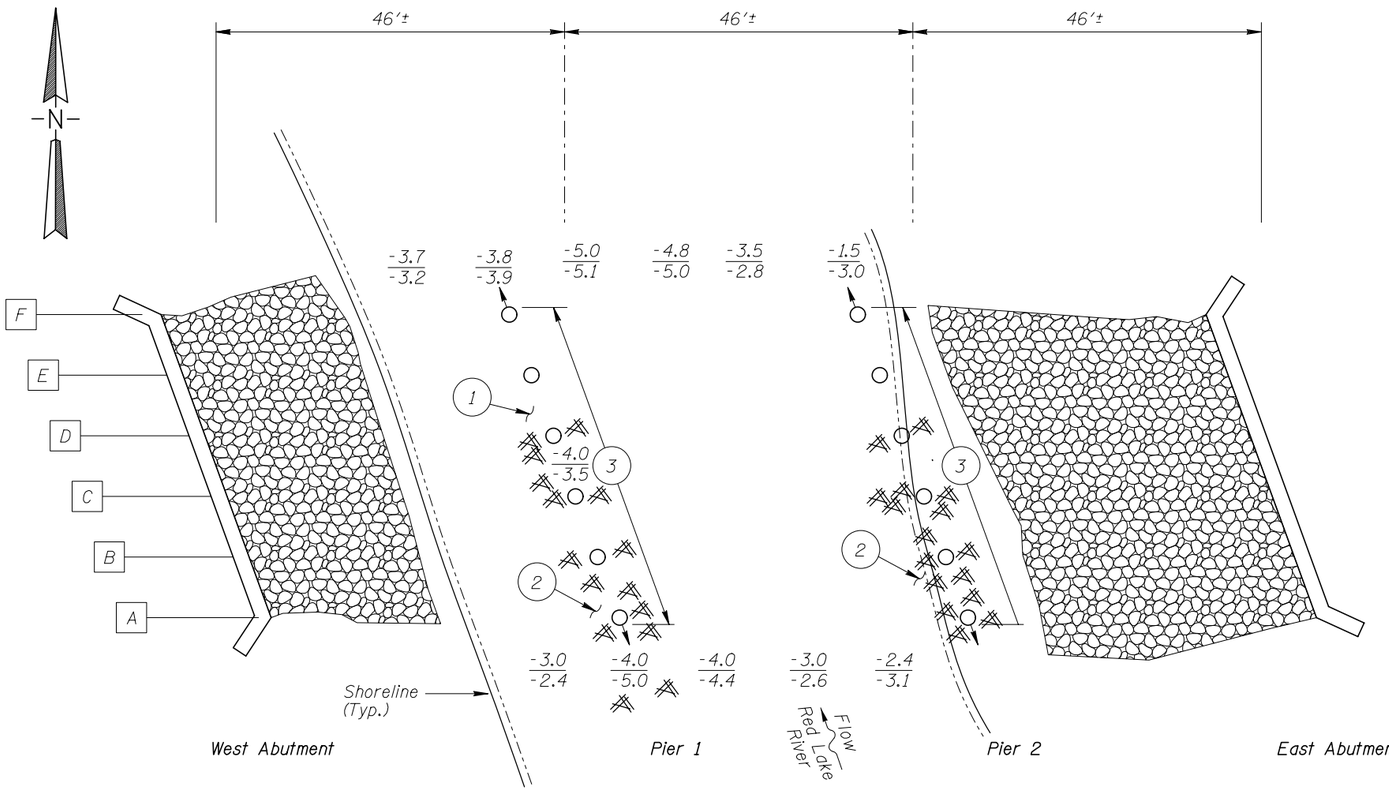
Photograph 1. Overall View of Structure, Looking Southeast.

Photograph 2. View of Pier 1, Looking Southeast.

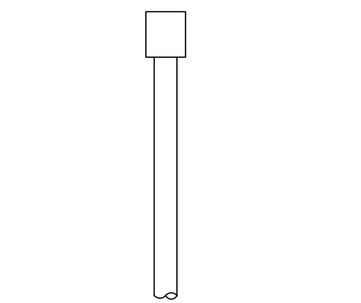
Photograph 3. View of Pier 2, Looking Southeast.

Photograph 4. View of Debris at the Upstream Piles of Pier 2, Looking Northeast.

Photograph 5. View of Pier 2, Looking Northwest.



SOUNDING PLAN



TYPICAL END VIEW OF BENTS

GENERAL NOTES:

1. Piers 1 and 2 were inspected at this bridge.
2. At the time of inspection on August 18, 2007, the waterline was located approximately 14.0 feet below the top of the pile cap on the upstream end of Pier 1. Design plans were not available, therefore a reference of 100.0 was assumed. Based on the assumed reference the waterline elevation was 86.0.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

(1) The channel bottom material around Piers 1 and 2 consisted of sand with 12 inches of probe rod penetration.

(2) A light to moderate accumulation of 1-foot-diameter and smaller timber debris and organic material was observed around Piles A through D at Piers 1 and 2.

(3) The steel pipe piles exhibited coating failure and random areas of minor surface corrosion with no appreciable loss of section over approximately 50 percent of the surface area from 5 feet below the top of the piles to the channel bottom.

Legend

-8.0 / -6.8	Sounding Depth (8/18/07) / Sounding Depth (8/26/02)
○	Steel Pile
○→	Battered Steel Pile
A	Pile Designation Identification
	Riprap
	Timber Debris

Note:

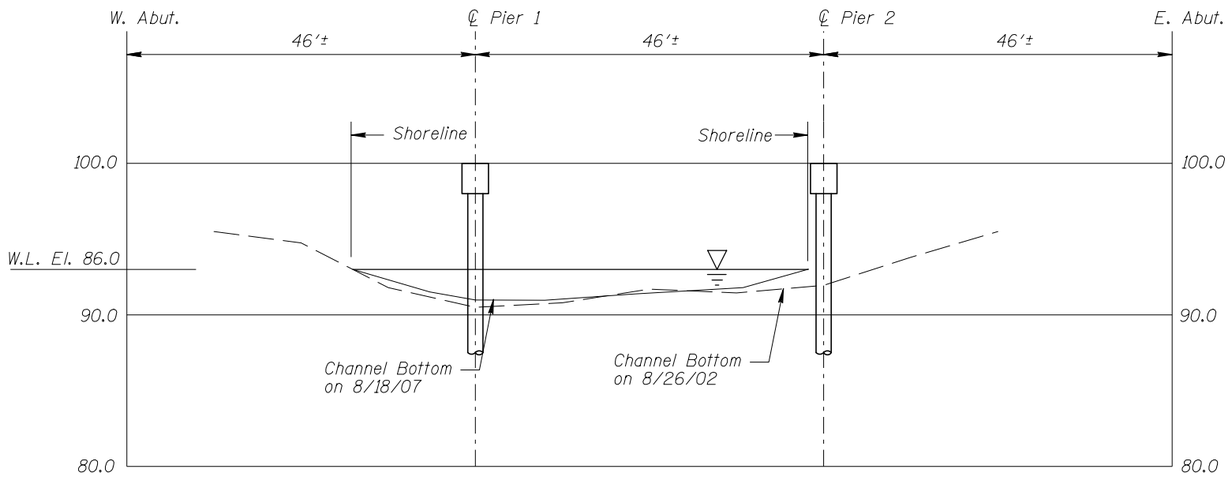
All soundings based on 2007 waterline location.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

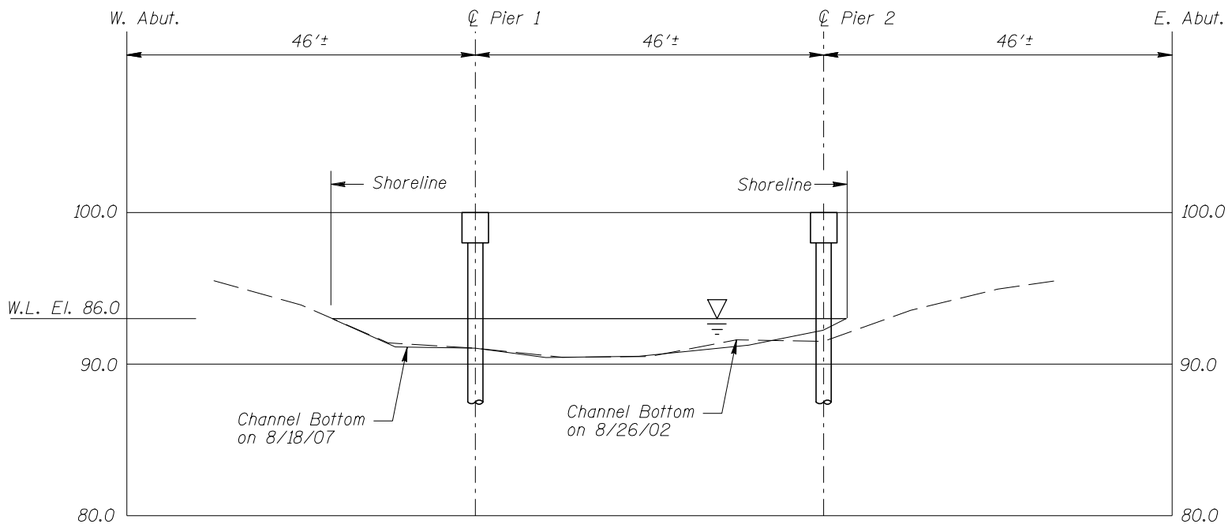
STRUCTURE NO. 57518
OVER THE RED LAKE RIVER
DISTRICT 2, PENNINGTON COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: MDK	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: AUG. 2007
Checked By: DGS		Scale: NTS
Code: 52210094		Figure No.: 1



UPSTREAM FASCIA PROFILE
Vertical Scale: 1"=20'-0"



DOWNSTREAM FASCIA PROFILE
Vertical Scale: 1"=20'-0"

Note:

Refer to Figure 1 for General Notes.

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UPSTREAM AND DOWNSTREAM
FASCIA PROFILES

Drawn By: MDK	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, Il. 60606 (312) 704-9300 www.collinsengr.com	Date: AUG. 2007
Checked By: DGS		Scale: 1"=20'
Code: 5221009A		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: August 18, 2007

ON-SITE TEAM LEADER: Bradley A. Syler, P.E., S.E.

BRIDGE NO: 57518 WEATHER: Sunny, 69° F

WATERWAY CROSSED: The Red Lake River

DIVING OPERATION: X SCUBA _____ SURFACE SUPPLIED AIR

_____ OTHER_____

PERSONNEL: John J. Loftus, Valerie Roustan

EQUIPMENT: Scuba, U/W Light, Scraper, Lead Line, Sounding Pole, Probe Rod, Camera

TIME IN WATER: 9:28 A.M.

TIME OUT OF WATER: 9:47 A.M.

WATERWAY DATA: VELOCITY 1.5 fps

VISIBILITY 4.0 feet

DEPTH 4.0 feet maximum at Pier 1

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, the 16 inch diameter pile encasements of both piers were coated from top of pile to the channel bottom. The piles typically exhibited no loss of coating from top of pile down 5 feet. From 5 feet below the top of the pile to the channel bottom, the piles exhibited loss of coating over up to 50% of total surface area. In the areas of coating loss, the piles exhibited random areas of corrosion consisting of minor surface corrosion with no appreciable section loss. Timber drift and organic material were observed around piles A thru D of Pier 1 and Pier 2. The channel bottom material consisted of sand allowing up to 12 inches of probe rod penetration.

FURTHER ACTION NEEDED: _____ YES _____X_____ NO

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 57518
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Bradley A. Syler, P.E., S.E.
WATERWAY CROSSED The Red Lake River

INSPECTION DATE August 18, 2007

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER (BRACING)	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	4.0’	7	N	N	9	N	7	8	8	8	6	7	N	8	N	8	N	N
	Pier 2	1.5’	7	N	N	9	N	7	8	8	8	6	7	N	8	N	8	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the 16 inch diameter pile encasements of both piers were coated from top of pile to the channel bottom. The piles typically exhibited no loss of coating from top of pile down 5 feet. From 5 feet below the top of the pile to the channel bottom, the piles exhibited loss of coating over up to 50% of total surface area. In the areas of coating loss, the piles exhibited random areas of corrosion consisting of minor surface corrosion with no appreciable section loss. Timber drift and organic material were observed around piles A thru D of Pier 1 and Pier 2. The channel bottom material consisted of sand allowing up to 12 inches of probe rod penetration.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.